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CACHING,
WEAPONS B.C.

In replying please address

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August 12, 1959

Recd 8/20/59

Dear Sir:

In accordance with recent discussions with your technical representative, we are herewith submitting a proposed research program directed toward the investigation of modifications of the latch design for the experimental rectangular-cross-sectioned burial container that was developed under Task Orders Nos. D and S.

On May 29, 1956, Task Order No. D was undertaken, directed toward developing a rectangular-cross-sectioned burial container that was intended to satisfy several selected requirements. The efforts under this program resulted in the preparation of three experimental containers, as described in the Summary Report on Task Order No. D dated April 30, 1957. On June 28, 1957, efforts were initiated on Work Orders Nos. XIII and XIV under Task Order No. A to evaluate further the experimental containers developed under Task Order No. D and to investigate selected minor modifications. The research performed under these two Work Orders was described in our summary letter reports dated October 8, 1957, and December 30, 1957, respectively.

On December 20, 1957, Task Order No. S was undertaken, directed toward the preparation of 10 experimental rectangular-cross-sectioned

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underground-burial containers which incorporated the results of the previous research. This effort was described in the Summary Report on Task Order No. 8 dated August 31, 1958. Subsequently, selected modifications were investigated and then applied to the 10 experimental containers under Work Order No. I, Task Order No. CC, as described in our summary letter report dated April 16, 1959.

During recent meetings with your technical representative, the operation of the latches on these 10 experimental containers was discussed. Your representative pointed out that the closure mechanism operates satisfactorily when used properly, but that, when the latch mechanism is used to push the lid into the closed position, the operator has a natural tendency to continue the rotation of the latch parts in an attempt to make them lie flat on the lid. This procedure results in the bending of vital parts of the latch mechanism, and these bent parts prevent the latch mechanism from subsequently being operated properly.

The closure mechanism of the experimental rectangular-cross-sectioned container consists of three main components, namely, the container flange, the lid assembly, and two latch assemblies. The lid fits inside the container flange and seals the container by means of an O-ring in the lid that presses against the inside surfaces of the container flange; because of the friction between the O-ring and the container flange, the lid is not easily inserted or removed. The two latch assemblies have therefore been provided to allow the operator to

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pry the lid from the container flange for easy removal and to push the lid into the container flange for easy closing. Essentially, the latches serve as levers for these two operations. In addition, when the lid is in place, the two latch assemblies are connected by a toggle action and thus the lid is prevented from being accidentally removed.

In the present design, the experimental container is opened easily because, as the two latch assemblies are disconnected and raised, the lid is pried from the container. During the closing operation, however, the heels of the latches must be placed on top of the lid as it rests on the container flange; rotation of the latch assemblies down and inward then results in the lid being pushed into place. However, after the lid has been inserted in this manner, the latch assemblies must be raised and re-positioned before they can be laid flat and toggled together. An operator's natural inclination might be to forget about the latch-assembly raising step in the operation; he might readily continue to push down on the latch assemblies, with the result that the latch heels would become bent and inoperable.

A satisfactory latch would be one that permitted the lid-opening and -closing operations to be accomplished by simply raising and lowering, respectively, the two latch assemblies. This letter describes a proposed program of research directed toward the development of this type of latch arrangement for the experimental rectangular-cross-sectioned burial container.

The proposed program would be initiated by holding meetings involving selected personnel, with the objective of generating ideas

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for designs of latch mechanisms which would operate in the above-described manner. The ideas generated would be screened; probably, layout drawings based on several of the conceived ideas would be prepared, and possibly some simple components would be prepared and assembled, in order to demonstrate the basic ideas. In addition to ideas constituting modifications of the current basic design, radically new ideas would also be considered, cursorily, in the hope that an improved basic design might be evolved. Subsequently, the designs which appeared to be satisfactory would be discussed with your technical representative. A selection would then be made, mutually, of the design which appeared to show the most promise.

The components of the selected design would be prepared and assembled so as to provide a model which would be adequate for the investigation, and possibly the demonstration, of the action of the experimental latch mechanism. One of the old experimental-container bodies would be utilized; the components would be prepared as simply and cheaply as possible, in order to provide a means for studying the pertinent features including the location of the pivot points, latch length, toggle action, and over-all size. The performance of this model would be evaluated, and, where necessary, appropriate modifications would be made.

This model would subsequently be demonstrated to your technical representative. Additional modifications which were mutually considered to be worth while would be made, within the limits of the time and funds provided.

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If, as expected, the results of the proposed research are favorable, then a discussion would be held with your technical representative regarding an additional effort in connection with this problem. As currently contemplated, a program which might be proposed at that stage would probably be directed toward the incorporation of the experimental latch mechanism on a small number of containers, and the preparation of appropriate working drawings. Of course, such a program would be set up under another contractual arrangement.

Your technical representative would be kept informed of the activity under the proposed program by discussions via the telephone and during his periodic visits. At the conclusion of the proposed research period, a letter report would be submitted that summarized the highlights of the activity performed and the results obtained, as well as any pertinent recommendations.

We propose to undertake this effort over a period of three months, starting on the date of acceptance of authorization from the Contracting Officer to proceed. The proposed investigation could be conducted under Task Order No. KK. The Work Order would be a period-basis research agreement; it could be similar in form to that used previously under Task Order No. CC and the same administrative procedures would be followed. The Work Order would require only that the research be directed toward the objective outlined above, within the limits of the time and funds provided.

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It is estimated that an appropriation of \$2,996, including the fixed fee, is needed to fund the proposed program for the three-month period. A general breakdown of the estimated costs is attached.

If any additional information is needed, please let us know. You may direct any inquiries of a contractual nature to Mr. V. E. Young, at Extension 159.

Very truly yours,



Vice President

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In Duplicate

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the U. S. Government.

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For Research on **Investigation of Modification of Latch Design of Experimental Burial Container.**

Based upon a period-basis Contract for a research period of **three months.**

(Including time for submission of all reports. The proposed contract will not provide for earlier conclusion of the research.)

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ESTIMATED COSTS

We expect that the cost of this research for the period indicated above may be distributed approximately as set forth hereon, subject to the understanding that this allocation is merely an estimate, and actual costs incurred may vary from the categories shown. We have determined that these estimates are reasonable and consistent with established policies in its research for the various Government agencies, which policies are briefly discussed below and will be followed in determination of our actual costs hereunder.

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Materials & Supplies, etc.

\$ 100

(Including any equipment which may be purchased as necessary in performance of the research. Charges of \$25 or less are excluded from this item.)

Use of Equipment and Technical Services, Travel, and Misc.

\$ 350

(Including applicable costs of technical research and service divisions, and use of technical equipment, except that any undistributed balances of these accounts will be included in overhead. Cost of travel includes reasonable actual subsistence expenses and the actual cost of transportation. An allowance of up to 8¢ per mile for all necessary travel by privately owned conveyance is included in lieu of the cost of such travel.)

Salaries & Wages

(Including our predetermined accrual for vacation, holiday, and sick-leave pay, pensions, and social security.)

Type of Employee	No. of Man-Months	Estimated Cost
Supervision	1/4	\$260
Research Engineers	1-1/4	925
Lab. Assistants	1/2	220
Steno., Clerical,		
Shop & Photo., etc.	1/4	80
Total Salaries & Wages		1,485

Overhead

\$1,485

60 per cent of salaries and wages, as they are defined above. Provisional monthly reimbursement will be at the rate of 60 per cent of salaries and wages, as so defined, or at such other provisional rate as may from time to time be mutually agreed upon with the Government's audit representatives. This is a provisional rate for current reimbursement, which we have arrived at by negotiation with Government representatives, and it will be subject to retroactive revision to the "actual" rate agreed upon with them for each calendar year following a detailed audit for that year. The item of overhead includes general research, charges of \$25 or less for materials and supplies, and other categories of costs we customarily include in our overhead account. Cash discounts on all purchases will be credited to overhead, instead of to the amount of the purchase. Scrap of appreciable value will be credited directly to the project. All other scrap will be credited to the overhead account, in which the Government participates.)

\$ 891

\$2,826

\$ 170

\$2,996

Total Estimated Cost

Fixed Fee

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*Please let us have your acceptance in our hands by **September 30, 1959.** **Contract Price**

Unless we extend the time, your acceptance after that date will be subject to agreement.

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